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SEP 19 2008

Docket No. 61755(51035)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: J.P. Maye
Serial No.: 09/520,004
Filed: February 10, 2003
For: PROCESS FOR CONTROLLING MICRO-ORGANISMS IN AN AQUEOUS
PROCESS MEDIUM
Examiner: Vera Stulli
Art Unit: 1617

Mail Stop: Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450.

Sir:

DECLARATION UNDER 37 C.F.R. 1.132

I, Chris Most, a citizen of the United States of America, hereby declare as follows:

1. I am Production Manager at Nebraska Energy LLC, 1205 South O Road, Aurora, NE 68818-5304.

2. I understand that this declaration is submitted in support of pursuing a U.S. patent on the subject matter described and claimed in the patent application U.S.S.N. 09/520,004, filed on February 10, 2003 and otherwise identified above.

3. I understand that the claims relating to use of hop acids in processes for producing ethanol in the above-identified application are asserted by the Examiner to be obvious in view of the art documents cited in the Office Action dated March 19, 2008 and that this declaration is being submitted to support a response rebutting that assertion.

4. Based on my knowledge and expertise as a practitioner in this field and based on my experience in the field, it is my expert opinion that prior to conducting any experiments on the effect of administration of hop acids in fuel ethanol production, one of ordinary skill in this field would not have expected the use of hop acids in the manner claimed in the above-identified application to have any appreciable effects on fuel ethanol production.

5. The following experiments or treatments were conducted by me or under my supervision, to examine the effect of administration of hop acids in fuel ethanol production.


6. We performed fermentation processes to produce fuel ethanol wherein hop acids were not used in any form during processing.

7. We then performed fermentation processes to produce fuel ethanol essentially as described in Section 6 above wherein the only change was that hop acids (e.g., isoalpha acids in alkaline solution form) were administered pre-fermentation during the process in the yeast propagation vessel.

8. These results indicate that administration of hop acids in the form and manner described in Section 7 above relative to Section 6 above (i.e., control) provided the following surprising and unexpected benefits: (i) healthier yeast counts along the fermentation train, process, especially at the back end, which led to better glucose utilization and higher alcohol numbers; (ii) increase throughput capacity; (iii) improved maintenance of acceptable alcohol levels during all plant upset events

occurring during treatments; (iv) increased "backset" from about 10% to about 19%, which enabled the plant to lower sulfuric acid consumption needed for pH adjustment of the fermenters which in turn allowed the plant to meet sulfur content specifications in the ethanol produced and reduced the amounts of fresh water required in the front end of the process. "Backset" (aka recycled thin stillage) is a significant production advantage because: (a) it allows for greater water recycling, which reduces costs associated with the need to continuously introduce new fresh water to the process; (b) it is a source of nutrients for the process; (c) it results in greater pollution control due to reduced effluent production and reduced biological oxygen demand (BOD) to the environment; (d) it reduces the liquid residue required to be evaporated; (e) it lowers the acidity of the mash medium thus reducing the need for additional amounts of sulfuric acid in the process (which is crucial for meeting sulfur specifications in the final fuel ethanol product). In summary, these advantages observed in the processes using hop acids as described above result in a significantly improved and more efficient process for ethanol production. The observed specific advantages delineated above as well as the improved overall process were unexpected.

9. I, the undersigned Chris Most, further declare that all statements made herein of my own knowledge are true and that all statements made upon information and belief are believed to be true, and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 101 of Title 18 of the United States Code and that such willful false statement may jeopardize the validity of the above identified application or any patent issuing thereon.

By: 
Chris Most Production Manager
Nebraska Energy, LLC
Date: 8-25-08